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Ionospheric Data Report — May 1964

IONOSPHERIC DATA: BANGKOK, THAILAND

Compiled by: VICHAI T. NIMIT

Prepared for:

U.S. ARMY ELECTRONICS LABORATORIES
FORT MONMOUTH, NEW JERSEY

CONTRACT DA-36-039-AMC-00040(E)
ORDER NO. 5384-PM-63-91



STANFORD RESEARCH INSTITUTE
MENLO PARK, CALIFORNIA

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I INTRODUCTION

Ionospheric observations are being carried out at the Laboratory of the Military Research and Development Center at Bangkok, Thailand, a joint United States-Thailand organization. A Model C-2 vertical-incidence sounder supplied and operated by the United States Army Signal Radio Propagation Agency has been installed there. Table I gives pertinent information about the site.

Table I
VERTICAL-INCIDENCE SOUNDER SITE
AT BANGKOK, THAILAND

Geographic		Geomagnetic	
Latitude	Longitude	Latitude	Longitude
13.73°N	100.57°E	2.5°N	169.83°E

Dip angle: 10°N

Distance from dip equator: 450 km

Equipment:

Instrument: Type C2 (automatic)

PRF: 60 pps

Frequency sweep time: 30 sec

Frequency sweep range: 1 to 25 Mc

Pulse duration: 50 μ sec

Peak pulse power: approximately 10 kw.

The cooperation and participation of staff members of the Thailand Ministry of Defense and the support of the United States Advanced Research

Projects Agency, the United States Army Electronics Laboratories, and the United States Army Signal Radio Propagation Agency made it possible for the data presented in this report to be accumulated.

II TERMINOLOGY AND SYMBOLS

The terminology and symbols used in this data report are in accordance with the conventions established by the World Wide Soundings Committee.¹

A. TERMINOLOGY

$\left. \begin{array}{l} f_o F_2 \\ f_o F_1 \\ f_o E \end{array} \right\}$	The ordinary wave critical frequency for the F ₂ and F ₁ layers and the E region, respectively.
$f_o E_s$	The ordinary wave top frequency corresponding to the highest frequency at which a mainly continuous E _s trace is observed.
$f_b E_s$	The blanketing frequency of an E _s layer, i.e., the lowest ordinary wave frequency at which the E _s layer begins to become transparent. (This is usually determined from the minimum frequency at which reflections from layers at greater heights are observed.)
f_{min}	The frequency below which no echoes are observed.
$M(3000)F_2$	The maximum usable frequency factor for a path of 3000 km for transmission by the F ₂ layer.
$h' F_2$	The minimum virtual height of the ordinary wave trace for the highest stable stratification in the F region.
$h' F$	The most significant F-region virtual height parameter, that for the lowest F-region stratification. (Thus $h' F$ is identical with the current $h' F_2$ when F-region stratification is absent, i.e., at night, and with current $h' F_1$ when F ₁ stratification is present.)

¹W. R. Piggott and K. Rawer, URSI Handbook of Ionogram Interpretation and Reduction of the World Wide Sounding Committee (Elsevier Publishing Company, Amsterdam, London, New York, 1961).

B. DESCRIPTIVE LETTERS

Certain effects observed on ionograms may make it difficult or impossible to obtain accurate numerical values. The descriptive letters listed below, when used alone indicate, in general, the presence of a phenomenon that may have influenced the measurement. Qualifying letters (Sec. C) indicate the nature of the uncertainty.

- A A lower thin layer present, e.g., E_s
- B Absorption in the vicinity of f_{min}
- C Any non-ionospheric reason
- D The upper limit of the normal frequency range
- E The lower limit of the normal frequency range
- F Spread echoes present
- G Ionization density of the layer too small for measurement
- H Stratification present
- L No sufficiently definite cusp between layers of the trace
- M Ordinary and extraordinary components indistinguishable
- N Conditions such that the measurement cannot be interpreted
- O Measurement referring to the ordinary component
- R Attenuation in the vicinity of a critical frequency
- S Interference or atmospherics
- T Value determined by a sequence of observations, the actual observation being inconsistent or doubtful
- V Forked trace
- W Echo lying outside the height range recorded
- X Measurement referring to the extraordinary component
- Y Intermittent trace
- Z Third magneto-ionic component present.

C. QUALIFYING LETTERS

- D Greater than. . .
- E Less than. . .

- I An interpolated value
- J Ordinary component characteristic deduced from the extraordinary component
- O Extraordinary component characteristic deduced from the ordinary component
- T Value determined by a sequence of observations, the actual observation being inconsistent or doubtful
- U Uncertain numerical value
- Z Measurement deduced from the third magneto-ionic component.

D. DESCRIPTION OF STANDARD TYPES OF E_s

The eight standard types of E_s are identified by lower-case letters: f, l, c, h, q, r, a, and s. These letters suggest the corresponding names, flat, low, cusp, high, equatorial, retardation, auroral, and slant, respectively, but are not restrictive. The letter n is used to designate an E_s trace that does not correspond to one of the eight types. The classifications are:

- f An E_s trace showing no appreciable increase of height with frequency, usually relatively solid at most latitudes. (This classification may be used only at night; it appears that flat E_s traces observed in the daytime are classified according to their virtual height: h or l.)
- l A flat E_s trace at or below the normal E-region minimum virtual height in the day or below the E-region minimum virtual height at night.
- c An E_s trace showing a relatively symmetrical cusp at or below f_oE. (This is usually continuous with the normal E trace, although when the deviative absorption is large, part or all of the cusp may be missing—usually a daytime type.)
- h An E_s trace showing a discontinuity in height with the normal E-region trace at or above f_oE and an asymmetrical cusp. (The low-frequency end of the E_s trace lies clearly above the high-frequency end of the normal E trace—usually a daytime type.)
- q An E_s trace that is diffuse and nonblanketing over a wide frequency range, the spread being most pronounced at the upper edge of the trace. (This type is common in daytime in the vicinity of the magnetic equator.)
- r An E_s trace that is nonblanketing over part or all of its frequency range, showing an increase in virtual height at the high-frequency

end similar to group retardation. (This is distinguished from the usual group retardation—as in the case of an occulting thick E region—by the lack of group retardation in the F traces at corresponding frequencies and the lack of complete blanketing.)

- a An E_s pattern having a well-defined flat or gradually rising lower edge with stratified and diffuse (spread) traces present above it. (These sometimes extend over several hundred kilometers of virtual height.)
- s A diffuse E_s trace that rises steadily with frequency, usually emerging from another type of E_s trace. (The rising trace alone is classified as s; the horizontal trace is classified separately. At high latitudes, the slant trace usually starts to rise from a horizontal E_s trace, such as l or f, at frequencies that greatly exceed the E-region critical frequency, e.g., about 6 Mc; whereas at low latitudes it usually rises from equatorial-type E_s , q, c, or h, at frequencies near the regular E critical frequency. Type s is never used to determine $f_o E$ unless echoes clearly identifiable as E_s echoes are seen.)
- n An E trace that cannot be classified as one of the standard types. (This must not be used for intermediate cases between any two classes. A choice should always be made whenever possible, even if it is doubtful.)

Characteristic: f_{min}

IONOSPHERIC DATA

Sweep: 1 Mc to 25 Mc in 0.5 minute

May 1964

Observed at:

Bangkok, Thailand

Lat. 13.73°N, Long. 100.57°E

105°E Mean Time (GMT + 7 hours)

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14
1	022*	023	023	B	B	B	018	E027S	023	035	036	039	049	040	050
2	029	026	035	034	029	B	021	024	026	029	032	033	031	031	029
3	023	022	C	C	C	C	C	C	C	C	C	030	030	030	E03
4	023	022	030	B	B	B	E017S	029	E030S	031	E031S	E031S	E030S	050	E03
5	C	023	021	022	023	025	E026S	F035S	E036S	035	E046S	C	C	064	U04
6	015	014	011	013	013	E015S	E020S	E030S	E029S	030	031	E031S	E031S	U035C	E02
7	019	015	013	012	011	E016S	E018S	E024S	U032C	E030S	037	E031S	030	E033S	03
8	C	C	C	C	C	C	C	C	C	E029S	030	E030S	E030S	E031S	03
9	E017S	016	014	C	C	C	C	C	C	C	C	C	C	C	C
10	023	028	024	022	B	B	025	U030C	C	C	C	C	C	036	037
11	025	025	023	029	022	C	C	C	C	031	E050S	028	C	C	03
12	026	B	035	032	C	027	021	027	038	031	E052S	E055S	062	065	C
13	024	016	011	015	018	019	021	022	027	031	031	040	030	031	03
14	B	016	020	B	020	019	025	023	026	E038S	E045S	E055S	E045S	E052S	03
15	026	E017S	E015S	E018S	E013S	E017S	E020S	E021S	030	030	034	E029S	042	030	C
16	025	E017S	E018S	E019S	E018S	E019S	E020S	E021S	028	029	033	030	030	030	03
17	018	B	027	019	015	018	E030S	E032S	E030S	E030S	E030S	E030S	E030S	E030S	E03
18	E021S	022	018	020	019	023	021	026	028	029	028	E028S	028	E030S	E05
19	E021S	E017S	E021S	E021S	E020S	S	S	E035S	E030S	029	029	029	030	030	03
20	E016S	E015S	012	012	012	015	E019S	E020S	027	028	029	030	033	034	02
21	E018S	013	013	016	018	021	C	C	C	032	033	035	030	035	E02
22	021	017	013	016	015	016	019	E027S	029	031	045	030	030	031	02
23	C	C	C	C	C	C	C	C	C	031	C	C	C	E026S	02
24	023	016	020	016	011	E015S	018	020	026	030	029	037	040	036	03
25	018	014	016	013	017	020	022	025	029	033	031	041	030	032	02
26	018	019	016	C	C	C	C	C	C	028	034	029	B	B	03
27	B	B	E010E	015	011	016	B	027	019	029	045	031	029	029	03
28	B	B	013	B	014	013	019	021	026	031	034	035	035	029	02
29	E018S	016	E010E	012	012	E016S	019	020	027	027	026	030	028	E060S	02
30	E020S	E019S	023	014	013	014	E020S	E020S	027	027	E035S	E042S	E035S	E028S	E02
31	E018S	011	E010E	E010E	E010E	014	E017S	E018S	020	026	028	029	029	030	03
Median	021	017	017	016	015	016	020	025	028	030	033	031	030	031	03
Count	25	25	28	21	22	20	22	24	23	28	27	27	26	28	2
UQ	023	022	023	021	019	019	021	028	030	031	037	036	035	037	03
LQ	018	016	013	013	012	015	019	021	026	029	030	030	030	030	03
QR	5	6	10	8	7	4	2	7	4	2	7	6	5	7	0

* Tabulation of 022 = 2.2 Mc.

IONOSPHERIC DATA

Sweep: 1 Mc to 25 Mc in 0.5 minute

May 1964

08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
023	035	036	039	049	040	052	035	033	050	E0298	E0185	023	026	020	020
026	029	032	033	031	031	029	E0298	E0306	E0265	E0185	018	017	E0165	017	E0175
C	C	C	030	030	030	E0308	025	020	019	020	E0175	030	030	027	021
E0308	031	E0318	E0318	E0308	050	E0308	E0608	C	C	C	C	C	C	C	C
E0365	035	E0465	C	C	064	U040C	B	C	C	C	018	E0175	E0205	E0185	E0175
E0298	030	031	E0318	E0318	U035C	E0298	E0265	024	023	E0175	E0175	E0195	E0205	E0195	E0195
U032C	E0308	037	E0318	030	E0338	035	033	031	030	024	E0185	E0175	E0175	E0175	E0175
C	E0298	030	E0308	E0308	E0318	035	031	030	025	025	018	018	E0185	E0185	021
C	C	C	C	C	C	C	033	031	E0275	E0185	019	E0175	E0165	E0185	023
C	031	E0508	028	C	036	037	C	029	030	029	C	C	C	025	021
038	031	E0525	E0558	062	065	C	C	023	023	021	021	022	023	026	B
027	031	031	040	030	031	030	038	031	E0298	021	024	019	E0255	E0218	E0255
026	E0388	E0455	E0555	E0455	E0525	031	042	034	E0275	E0268	E0235	E0255	E0285	E0255	E0185
030	030	034	E0298	042	030	C	028	021	E0215	E0195	E0215	E0205	E0215	E0215	026
028	029	037	030	030	030	330	029	029	026	E0236	023	019	025	E0335	021
E0308	E0308	E0306	E0308	E0308	E0308	E0315	E0275	E0275	E0265	E0215	E0205	E0295	E0285	E0295	E0255
028	029	028	E0285	028	E0308	E0508	C	E0345	E0315	E0265	E0205	E0255	E0255	E0225	E0195
E0308	029	029	029	C	030	030	024	E0255	E0275	E0255	E0195	E0205	E0205	E0205	020
017	028	029	030	033	034	029	027	026	U0255	024	027	E0285	E0275	024	021
C	032	033	035	030	035	E0265	026	E0265	E0268	033	019	025	026	018	030
029	031	045	030	030	031	029	029	029	029	E0255	021	021	021	029	020
C	031	C	C	C	E0265	029	042	045	028	024	026	021	027	029	021
026	030	029	037	040	036	038	C	028	026	E0185	018	019	021	020	021
029	033	031	041	033	032	027	025	020	019	019	027	019	023	018	019
C	028	034	029	B	B	031	027	027	C	C	020	020	020	023	E0195
019	029	045	031	029	029	030	030	024	E0255	021	023	E0165	E0175	E0175	E0175
026	031	034	035	035	029	027	028	E0355	024	E0185	S	E0308	E0298	E0175	E0185
027	027	026	030	028	E0608	027	042	024	048	030	034	E0345	E0315	B	B
027	027	E0355	E0425	E0358	E0285	E0295	025	020	E0338	E0255	E0255	E0225	020	E0185	E0165
020	036	028	029	026	030	030	033	029	E0285	025	E0255	E0195	E0245	E0165	E0175
028	030	033	031	030	031	030	028	029	026	024	020	020	023	020	020
23	28	27	27	26	26	27	26	28	28	28	28	29	29	29	27
030	031	037	036	035	037	035	035	031	029	025	024	025	026	025	021
026	029	030	030	030	030	029	026	024	025	020	018	019	020	018	018
4	2	7	6	5	7	8	9	7	4	5	6	6	6	7	3

Characteristic: f_oF_2

IONOSPHERIC DATA

Sweep: 1 Mc to 25 Mc in 0.5 minute

May 1964

Observed at:

Bangkok, Thailand

Lat. 13. 73°N, Long. 100.57°E

105°E Mean Time (GMT + 7 hours)

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13
1	U059F	062*	D031R	B	B	B	039	061	075	082	099	080	073	076
2	U046F	A	U042F	0040H	0029H	B	040	059	081	085	081	071	U072S	075
3	U033F	U035U	C	C	C	C	C	C	C	C	C	061	A	A
4	048	045	U035F	B	B	B	045	052	066	U070S	061	067	081	084
5	C	U033F	U030F	U028F	U027F	028	U047S	D045S	S	065	D051S	C	C	072
6	056	053	U041F	U042F	F	A	U053S	U072S	U086S	085	080	A	076	U091C
7	034	034	032	020	016	A	042	U062S	U080C	U080S	050	U060S	060	U072S
8	C	C	C	C	C	C	C	C	C	071	065	U064S	065	U075S
9	F	F	F	-	-	-	-	-	-	-	-	-	-	-
10	F	F	A	U033C	B	B	U050C	U072C	-	-	-	-	-	-
11	U040F	F	F	U038F	U035F	C	C	C	C	U070S	D071S	A	C	C
12	A	B	A	A	C	A	037	070	075	079	075	062	072	080
13	040	034	031	028	023	A	048	070	065	072	070	070	A	072
14	B	A	A	B	A	A	045	U062S	076	070	072	070	067	073
15	U038F	F	F	F	F	F	037	057	076	073	072	060	062	072
16	F	F	F	F	A	A	U052S	071	U075S	075	072	058	064	073
17	A	B	035	025	A	A	041	063	067	063	065	A	A	A
18	030	027	025	024	027	026	046	057	062	070	066	065	066	075
19	040	D026S	U030S	A	A	S	050	D050S	D050S	056	056	056	055	071
20	031	030	U026F	F	A	A	U047F	053	056	061	061	056	069	070
21	F	A	A	A	A	035	C	C	C	057	069	055	065	070
22	024	A	F	F	A	A	A	053	065	068	066	063	065	063
23	-	-	-	-	-	-	-	-	-	080	-	-	-	064
24	U032F	F	F	A	A	A	034	A	056	058	063	054	065	078
25	U034F	U032F	U032F	U028F	A	033	060	072	078	074	070	066	068	068
26	U034F	F	F	-	-	-	-	-	-	058	060	064	B	B
27	B	B	A	A	A	A	B	075	050	063	053	A	A	A
28	B	B	U016C	B	A	A	A	059	065	064	A	056	065	066
29	F	F	F	F	027	U022S	042	055	064	065	065	056	062	065
30	F	U035F	A	A	A	A	039	071	065	068	067	068	069	071
31	U029S	F	P	A	A	A	043	047	062	066	070	070	070	074
Median	034	034	031	028	027	028	044	062	066	068	067	063	066	072
Count	17	11	13	10	7	5	20	21	21	28	25	23	23	25
UQ	043	045	035	038	029	034	048	071	076	073	072	068	070	075
LQ	032	032	028	025	025	024	040	056	063	062	062	056	065	070
QR	11	13	7	13	4	10	8	13	13	11	10	12	05	05

*Tabulation of 062 = 6.2 Mc.

IONOSPHERIC DATA

Sweep: 1 Mc to 25 Mc in 0.5 minute

May 1964

08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
075	082	099	080	073	076	076	080	D085S	D080S	D102S	U080C	073	F	F	F
081	085	081	071	U072S	075	070	U077S	D090S	D095S	U100E	U090S	075	057	040	U038F
C	C	C	061	A	A	081	086	088	089	D085S	090	077	071	070	050
076	U070S	061	067	081	084	086	U072S	C	C	C	C	C	C	C	C
S	065	D051S	C	C	072	U079C	B	C	C	C	085	069	U081S	U066S	052
U036S	085	080	A	076	U091C	093	092	091	100	D130R	D120S	U062S	043	U033S	033
U080C	U060S	056	U060S	060	U072S	080	087	089	092	102	U105S	082	071	057	U042S
C	071	065	U064S	065	U075S	094	100	094	095	092	U083S	091	090	F	F
-	-	-	-	-	-	-	089	091	091	U090B	102	103	U057S	A	036
-	-	-	-	067	U071C	-	-	D075R	D080S	U087S	C	C	C	D045S	D044S
C	U070S	D071S	A	C	C	U100C	095	D090R	095	D092S	D111S	094	051	A	B
075	079	075	062	072	080	C	C	C	D095S	U095S	084	080	071	056	045
065	072	070	070	A	072	075	090	095	121	D102S	075	U040S	U035S	D025S	B
076	070	072	070	067	073	U080S	091	100	D095S	UC91S	D095S	066	D047S	D036S	031
076	073	072	060	062	072	C	100	D098S	D095S	D100S	D100S	085	U050S	U045S	F
U075S	075	072	058	064	073	090	101	104	102	140	084	071	060	055	U042F
067	063	065	A	A	A	070	078	090	U090S	U102S	U115S	095	065	050	U041S
062	070	066	065	066	075	U085S	C	U083C	U083C	U090S	U110C	U091C	U065C	D042S	036
D050S	056	056	056	066	071	U072S	U075S	U085S	085	086	092	090	070	D045S	037
056	061	061	056	069	070	071	085	090	D090S	U095S	080	068	054	D031R	F
C	057	069	055	065	070	070	072	079	U080S	078	085	077	060	041	033
065	068	066	063	065	063	070	080	085	083	083	091	067	043	U037S	U037S
-	060	-	-	-	064	070	079	080	087	085	081	070	053	045	U030F
056	058	063	054	065	078	D085R	C	083	D086R	D090R	101	078	U051S	U051S	036
078	074	070	066	068	068	066	070	U077S	U100S	U091S	D041R	053	U040S	U037S	032
-	058	060	064	B	B	072	077	081	-	-	U078S	061	036	D026R	025
056	063	053	A	A	A	A	077	086	U095S	U095S	U100S	U049S	U033S	A	A
065	064	A	056	065	066	068	U071S	U080S	072	068	S	U082S	074	U050S	F
064	065	065	056	062	065	068	066	070	080	U096S	072	047	049	B	B
065	068	067	068	069	071	069	067	074	077	085	080	088	076	U039S	027
062	066	070	070	070	074	073	074	073	077	083	D101S	U060S	036	027	023
066	068	067	063	066	072	074	079	087	090	095	090	075	057	044	036
21	28	25	23	22	25	26	26	26	25	25	28	29	27	24	21
076	073	072	068	070	075	085	090	091	095	102	101	087	071	050	042
063	062	062	056	065	070	070	074	080	083	086	080	064	043	037	032
13	11	10	12	05	05	15	16	11	12	16	19	23	28	13	10

Characteristic: M(3000)F₂

IONOSPHERIC DATA

Sweep: 1 Mc to 25 Mc in 0.5 minute

May 1964

Observed at:

Bangkok, Thailand

Lat. 13. 73°N, Long. 100. 57°E

105°E Mean Time (GMT + 7 hours)

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13
1	U300F	375*	R	B	B	B	350	330	330	310	300	250	220	255
2	U265F	A	U320F	R	R	B	330	330	320	280	245	250	U260S	230
3	U310F	U375C	C	C	C	C	C	C	C	C	C	300	A	A
4	270	280	U280F	B	B	B	340	310	275	U250S	250	255	270	270
5	C	U310F	U300F	U310F	U310F	320	U340S	S	S	290	S	C	C	235
6	315	295	U34CF	U345F	F	A	U330S	U320S	U295S	265	260	A	250	U290C
7	315	330	360	350	360	A	345	U320S	U275C	U270S	280	U260S	280	U270S
8	C	C	C	C	C	C	C	C	C	255	235	U255S	240	U260S
9	F	F	F	-	-	-	-	-	-	-	-	-	-	-
10	F	F	A	U340C	B	B	U310C	U330C	-	-	-	-	-	-
11	U275F	F	F	U350F	U370F	C	C	C	U310S	S	A	C	C	U250C
12	A	B	A	A	C	A	355	320	295	260	260	265	275	270
13	310	310	350	370	280	A	295	320	280	250	240	240	A	290
14	B	A	A	B	A	A	340	U340S	300	280	250	245	260	260
15	U300F	F	F	F	F	F	310	315	275	260	215	260	275	270
16	F	F	F	F	A	A	U330S	320	U225S	250	255	270	255	270
17	A	B	360	370	A	A	325	310	275	260	250	A	A	A
18	295	310	330	320	350	395	345	320	280	265	230	240	240	260
19	320	S	U390S	A	A	S	S	S	S	280	250	265	260	280
20	330	330	U330F	F	A	A	U350F	330	295	275	255	275	230	250
21	F	A	A	A	A	305	C	C	C	300	245	280	265	275
22	305	A	F	F	A	A	A	315	270	270	250	240	230	255
23	-	-	-	-	-	-	-	-	-	275	-	-	-	220
24	U310F	F	F	A	A	A	330	A	280	290	270	285	270	300
25	U310F	U310F	U340F	U360F	A	320	325	310	300	245	220	245	255	245
26	U300F	F	F	-	-	-	-	-	-	280	335	250	B	B
27	B	B	A	A	A	A	B	345	320	275	275	A	A	A
28	B	B	U390S	B	A	A	A	330	290	230	A	260	245	265
29	F	F	F	F	370	U370S	360	320	280	260	230	265	250	260
30	F	U330F	A	A	A	A	335	310	285	285	270	250	250	250
31	U250S	F	F	A	A	A	330	325	300	255	260	270	260	265
Median	305	310	340	350	355	330	335	320	285	270	250	260	255	260
Count	17	11	12	9	6	5	20	21	21	28	24	23	22	25
UQ	315	330	360	365	370	385	345	330	300	280	265	270	265	270
LQ	285	310	325	330	310	315	330	315	275	260	245	250	245	250
QR	30	20	35	35	60	60	15	15	25	20	20	20	20	20

* Tabulation of 375 = factor of 3.75.

IONOSPHERIC DATA

Sweep: 1 Mc to 25 Mc in 0.5 minute

May 1964

08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
330	310	300	250	220	255	280	270	S	S	S	U330C	260	F	F	F
320	280	245	250	U260S	230	235	U265S	S	S	U340S	U340S	320	310	295	U300F
C	C	C	300	A	A	270	280	285	295	S	305	300	295	300	290
275	U250S	250	255	270	270	260	U290S	C	C	C	C	C	C	C	C
S	290	S	C	C	235	U260C	B	C	C	C	315	300	U310S	U310S	295
U295S	265	260	A	250	U290C	310	300	320	350	R	S	U340S	290	U300S	310
U275C	U270S	280	U260S	280	U270S	275	280	295	295	315	U340S	315	320	330	U310S
C	255	235	U255S	240	U260S	295	320	310	300	310	U330S	320	330	F	F
-	-	-	-	-	-	-	300	300	U290S	U300S	320	360	U330S	A	260
-	-	-	-	250	U250C	-	-	R	S	S	C	C	C	S	S
C	U310S	S	A	C	C	U335C	300	R	290	U325S	S	350	365	A	B
295	260	260	265	275	270	C	C	C	S	S	330	310	310	310	300
280	250	240	240	A	290	255	295	310	325	355	360	U360S	U300S	S	B
300	280	250	245	260	260	U280S	300	315	S	U330S	S	340	S	S	300
275	260	215	260	275	270	C	300	S	S	S	S	340	U330S	U270S	F
U225S	250	255	270	255	270	280	295	290	U320S	350	335	320	310	330	U290F
275	260	250	A	A	A	260	280	290	U310S	U320S	U300S	340	350	320	U320G
280	265	230	240	240	260	S	C	U280C	U290C	U300S	U340C	U350C	U350C	S	320
S	280	250	265	260	280	U270S	U275S	U300S	280	310	340	360	330	S	335
295	275	255	275	230	250	270	295	315	S	U350S	345	355	360	R	F
C	300	245	280	265	275	265	265	280	U290S	290	310	350	340	330	310
270	270	250	240	230	255	270	300	335	320	310	350	360	360	U370S	U280S
-	275	-	-	-	220	260	300	310	320	335	350	350	350	330	U340F
280	290	270	285	270	300	R	C	300	R	R	365	350	350	330	285
300	245	220	245	255	245	265	U290S	U290S	U325S	U345S	R	350	U320S	U330S	300
-	280	335	250	B	B	285	285	290	-	-	U360S	360	U330S	U280S	340
320	275	275	A	A	A	A	270	320	U330S	U330S	U350S	360	345	R	340
290	230	A	260	245	265	255	U270S	U255S	260	270	S	U390S	U345S	A	A
280	260	230	265	250	260	255	260	265	300	U360S	365	330	350	U340S	F
285	285	270	250	250	250	255	245	260	300	310	330	360	370	B	B
300	255	260	270	260	265	275	280	280	300	310	S	U385S	360	U360S	340
285	270	250	260	255	260	270	285	295	300	320	340	350	330	330	305
21	28	24	23	22	25	24	26	23	20	21	22	29	27	17	20
300	280	265	270	265	270	280	300	310	320	345	350	360	350	335	323
275	260	245	250	245	250	260	270	280	290	310	330	320	310	300	293
25	20	20	20	20	20	20	30	30	30	35	20	40	40	5	30

B

Characteristic: h'F2

IONOSPHERIC DATA

Sweep: 1 Mc to 25 Mc in 0.5 minute

May 1964

Observed at:

Bangkok, Thailand

Lat. 13. 73°N, Long. 100.57°E

105°E Mean Time (GMT + 7 hours)

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13
1	-	-	-	-	-	-	-	-	-	-	-	400*	390	400
2	-	-	-	-	-	-	-	-	-	350	370	385	370	360
3	-	-	-	-	-	-	-	-	-	-	-	430	A	A
4	-	-	-	-	-	-	-	-	-	E510A	405	400	378	360
5	-	-	-	-	-	-	-	-	S	362	S	C	C	E500B
6	-	-	-	-	-	-	-	-	330	E320A	340	A	340	320
7	-	-	-	-	-	-	-	-	-	-	380	U380S	390	350
8	-	-	-	-	-	-	C	C	C	360	440	400	420	380
9	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-	400	E360A
11	-	-	-	-	-	-	-	-	-	-	370	A	C	C
12	-	-	-	-	-	-	-	-	-	-	350	E390S	E400B	E380B
13	-	-	-	-	-	-	-	-	305	330	380	400	A	E410A
14	-	-	-	-	-	-	-	-	-	340	390	E410S	370	360
15	-	-	-	-	-	-	-	-	-	340	400	415	390	360
16	-	-	-	-	-	-	-	-	-	-	380	E420A	E430A	360
17	-	-	-	-	-	-	-	-	-	350	E450A	A	A	A
18	-	-	-	-	-	-	-	-	320	350	400	400	410	375
19	-	-	-	-	-	-	-	-	-	E410A	E530A	E420A	400	370
20	-	-	-	-	-	-	-	-	-	350	380	E400A	E570A	E420A
21	-	-	-	-	-	-	-	-	-	340	440	390	E400A	370
22	-	-	-	-	-	-	-	-	-	-	380	410	430	400
23	-	-	-	-	-	-	-	-	-	390	-	-	-	440
24	-	-	-	-	-	-	-	-	-	-	420	375	370	330
25	-	-	-	-	-	-	-	-	-	E330A	410	410	400	390
26	-	-	-	-	-	-	-	-	-	-	380	415	B	B
27	-	-	-	-	-	-	-	-	-	-	E400B	A	A	A
28	-	-	-	-	-	-	-	-	-	E420A	A	E460A	410	370
29	-	-	-	-	-	-	-	-	-	E350A	E420A	E430A	405	E450S
30	-	-	-	-	-	-	-	-	-	318	375	380	370	380
31	-	-	-	-	-	-	-	-	-	380	370	330	370	330
Median Count	-	-	-	-	-	-	-	-	320 3	350 19	385 24	400 23	400 22	370 25
UQ	-	-	-	-	-	-	-	-	325	371	415	415	410	400
LQ	-	-	-	-	-	-	-	-	312	340	377	390	370	360
QR	-	-	-	-	-	-	-	-	13	31	38	25	40	40

*Tabulation of 400 = 400 km.

A

IONOSPHERIC DATA

Sweep: 1 Mc to 25 Mc in 0.5 minute

May 1964

08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
-	-	-	400*	390	400	360	370	-	-	-	-	-	-	-	-
-	350	370	385	370	360	360	370	-	-	-	-	-	-	-	-
-	-	-	430	A	A	360	340	330	-	-	-	-	-	-	-
-	E510A	405	400	378	360	335	300	-	-	-	-	-	-	-	-
S	362	S	C	C	E500B	380	B	C	C	-	-	-	-	-	-
330	E320A	340	A	340	320	310	310	-	-	-	-	-	-	-	-
-	-	380	U380E	390	350	340	310	-	-	-	-	-	-	-	-
C	360	440	400	420	380	330	295	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	320	-	-	-	-	-	-	-	-
-	-	-	-	400	E360A	-	-	-	-	-	-	-	-	-	-
-	-	370	A	C	C	320	-	-	-	-	-	-	-	-	-
-	-	350	E390S	E400B	E380B	C	C	C	270	-	-	-	-	-	-
305	330	380	400	A	E410A	370	320	-	-	-	-	-	-	-	-
-	340	390	E410S	370	360	360	-	-	-	-	-	-	-	-	-
-	340	400	415	390	360	C	-	-	-	-	-	-	-	-	-
-	-	380	E420A	E430A	360	330	340	E320A	280	-	-	-	-	-	-
-	350	E450A	A	A	A	E440A	E370A	E340A	290	-	-	-	-	-	-
320	350	400	400	410	375	370	-	-	-	-	-	-	-	-	-
-	E410A	E530A	E420A	400	370	350	360	310	-	-	-	-	-	-	-
-	350	380	E400A	E570A	E420A	E340A	325	-	-	-	-	-	-	-	-
-	340	440	390	E400A	370	360	330	300	-	-	-	-	-	-	-
-	-	380	410	430	400	380	320	300	-	-	-	-	-	-	-
-	390	-	-	-	440	370	335	310	-	-	-	-	-	-	-
-	-	420	375	370	330	335	C	-	-	-	-	-	-	-	-
-	E330A	410	410	400	390	370	-	-	-	-	-	-	-	-	-
-	-	380	415	B	B	E350A	340	330	-	-	-	-	-	-	-
-	-	E400B	A	A	A	A	E420A	305	300	-	-	-	-	-	-
-	E420A	A	E460A	410	370	365	E430A	E360S	-	-	-	-	-	-	-
-	E350A	E420A	E430A	405	E450S	E450A	360	360	310	-	-	-	-	-	-
-	318	375	380	370	380	380	E430A	-	-	-	-	-	-	-	-
-	380	370	330	370	330	347	360	-	-	-	-	-	-	-	-
320	350	385	400	400	370	360	340	320	300	-	-	-	-	-	-
3	19	24	23	22	25	26	22	11	5	-	-	-	-	-	-
325	371	415	415	410	400	370	370	340	310	-	-	-	-	-	-
312	340	377	390	370	360	340	320	305	290	-	-	-	-	-	-
13	31	38	25	40	40	30	50	5	20	-	-	-	-	-	-

Characteristic: h'F

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5 minute

Observed at:
Bangkok, Thailand
Lat. 13. 73°N, Long. 100.57°E
105°E Mean Time (GMT + 7 hours)

May 1964

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13
1	290*	240	250	B	B	B	250	250	230	230	220	230	B	E260B
2	360	A	340	310	310	B	280	270	250	E280A	E250A	E250A	A	A
3	280	260	C	C	C	C	C	C	C	C	C	A	A	A
4	340	380	380	B	B	B	260	E240A	E270A	A	200	A	A	B
5	-	350	320	320	320	300	270	260S	230	225	E250S	C	C	B
6	250	230	240	220	200	A	230	250	A	A	E210A	A	E200A	E200A
7	290	250	230	240	250	A	240	220	200	180	180	180	180	170
8	C	C	C	C	C	C	C	C	C	190	170	160	180	200
9	280	280	250	-	-	-	-	-	-	-	-	-	-	-
10	360	310	A	U300C	B	B	260	U210C	-	-	-	-	-	-
11	380	380	310	270	240	C	C	C	C	210	B	A	C	C
12	A	B	A	A	C	A	250	260	250	E300S	B	B	B	B
13	310	300	250	225	E420A	A	240	210	E200A	A	E220A	190	A	A
14	B	A	A	B	A	A	250	250	220	A	A	S	S	S
15	350	280	270	320	270	250	250	240	200	E320A	240	180	E200B	E230A
16	350	280	300	250	A	A	220	220	E460A	200	A	A	A	A
17	A	B	250	230	A	A	E290A	E230A	E230A	A	A	A	A	A
18	E330S	E240B	320	320	250	240	250	230	A	A	190	E240A	A	A
19	270	250	230	A	A	S	S	U210S	U220S	A	A	A	210	200
20	250	250	240	260	A	A	E260A	E260A	E215A	200	A	A	A	A
21	440	A	A	A	A	E270A	C	C	C	A	A	E200A	A	E360A
22	370	A	300	400	A	A	A	E250A	220	200	B	E220A	A	A
23	-	-	-	-	-	-	-	-	-	E250A	-	-	-	200
24	280	290	300	A	A	A	270	A	E240A	E330A	A	A	A	A
25	300	300	250	230	A	250	240	E250A	280	A	A	A	A	E210A
26	330	300	240	-	-	-	-	-	-	200	E215A	200	B	B
27	B	B	A	A	A	A	B	270	E210A	E190A	B	A	A	A
28	B	B	200	B	A	A	A	E250A	E350A	A	A	A	E210A	E180A
29	330	270	260	240	210	240	230	220	E300A	A	A	A	E190A	S
30	270	270	A	A	A	A	E260A	210	210	200	E270A	210	E220A	A
31	E310A	340	280	A	A	A	E300A	E220A	210	E260A	210	170	160	160
Median	330	280	255	260	250	250	250	240	230	210	215	200	200	200
Count	23	21	22	15	9	6	20	23	21	17	13	12	10	11
UQ	355	325	300	315	310	270	265	250	260	270	240	225	210	220
LQ	285	255	240	235	240	240	240	220	210	200	200	180	180	190
QR	70	70	60	80	70	30	25	30	50	70	40	45	30	30

* Tabulation of 290 = 290 km.

A

Sweep: 1 Mc to 25 Mc in 0.5 minute

Sweep: 1 Mc to 25 Mc in 0.5 minute

08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
230	230	220	230	B	E260B	B	230	230	300	260	300	360	320	280	340
250	E280A	E250A	E250A	A	A	E230A	220	250	240	270	240	250	260	330	320
C	C	C	A	A	A	220	A	A	260	260	260	290	300	305	E410A
E270A	A	200	A	A	B	E240A	B	-	-	-	-	-	-	-	-
230	225	E250S	C	C	B	230	B	C	-	-	-	-	-	-	-
A	A	E210A	A	E200A	E200A	E200A	A	290	E270A	C	200	230	230	250	260
200	180	180	180	180	170	200	190	190	220	250	200	205	260	320	300
C	190	170	160	180	200	180	200	200	220	230	220	220	230	230	260
-	-	-	-	-	-	-	200	200	220	230	230	230	250	230	250
-	-	-	-	E210A	A	-	-	210	210	240	230	200	230	A	460
C	210	B	A	C	C	220	200	210	210	240	-	-	-	280	420
250	E300S	B	B	B	B	C	C	E250A	220	240	210	200	219	A	B
200A	A	E220A	190	A	A	E210A	E200A	C	A	240	240	240	240	260	280
220	A	A	S	S	S	A	E290B	220	230	230	230	E240A	E320A	E370S	B
200	E320A	240	180	E200B	E230A	C	190	210	210	240	230	220	240	E280S	E360S
460A	200	A	A	A	A	E210A	A	210	280	250	235	220	240	340	400
230A	A	A	A	A	A	A	A	A	A	240	230	280	300	260	330
A	A	190	E240A	A	A	S	C	A	A	250	240	240	240	260	260
220S	A	A	A	210	200	E330A	A	E240S	230	E230S	240	220	230	250	250
215A	200	A	A	A	A	A	A	A	250	240	240	205	220	215	240
C	A	A	E200A	A	E360A	E240A	A	230	260	220	210	220	230	E420A	360
20	200	B	E220A	A	A	A	A	A	E270A	E250B	230	220	230	220	E370B
-	E250A	-	-	-	200	200	B	B	220	E230S	220	200	230	260	265
440A	E330A	A	A	A	A	A	C	220	245	250	220	230	240	260	270
80	A	A	A	A	E210A	170	220	220	250	230	210	205	250	260	330
-	200	E215A	200	B	B	A	A	240	240	230	240	225	290	290	320
10A	E190A	B	A	A	A	A	A	A	-	-	200	210	210	E300B	E290S
50A	A	A	A	E210A	E180A	A	A	A	A	280	210	210	E270A	A	A
00A	A	A	A	E190A	S	A	A	A	330	E320A	S	240	220	240	320
10	200	E270A	210	E220A	A	A	B	A	B	240	210	E250S	E250S	B	B
10	E260A	210	170	160	160	E210A	A	E200A	E230S	E250S	210	210	210	226	E260S
30	210	215	200	200	200	210	200	E340A	E270A	230	230	180	240	E270A	E310S
21	17	13	12	10	11	15	11	17	23	28	28	29	29	260	315
60	270	240	225	210	220	230	220	240	270	250	240	240	260	300	360
10	200	200	180	180	190	200	200	210	220	230	210	210	230	250	260
50	70	40	45	30	30	30	20	30	50	20	30	30	30	50	100

B

Characteristic: f_oF₁

IONOSPHERIC DATA

Sweep: 1 Mc to 25 Mc in 0.5 minute

May 1964

Observed at:

Bangkok, Thailand

Lat. 13. 73'N, Long. 100.75°E

105°E Mean Time (GMT + 7 hours)

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13
1	-	-	-	-	-	-	-	L	L	L	L	045	B	045
2	-	-	-	-	-	-	-	-	L	043*	043	045	A	A
3	-	-	-	-	-	-	-	-	-	-	-	A	A	A
4	-	-	-	-	-	-	-	L	L	A	045	A	045	B
5	-	-	-	-	-	-	-	S	U045S	044	S	C	C	B
6	-	-	-	-	-	-	-	L	A	A	46	A	U046S	U046C
7	-	-	-	-	-	-	-	-	L	L	044	U045S	045	046
8	-	-	-	-	-	-	C	C	C	045	045	046	044	045
9	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	L	-	-	-	-	044	A
11	-	-	-	-	-	-	-	-	-	L	B	A	C	C
12	-	-	-	-	-	-	-	A	A	L	B	B	B	B
13	-	-	-	-	-	-	-	046	A	L	046	U046S	A	A
14	-	-	-	-	-	-	-	L	L	A	A	S	S	S
15	-	-	-	-	-	-	-	L	L	043	045	046	046	043
16	-	-	-	-	-	-	-	L	A	L	A	A	A	A
17	-	-	-	-	-	-	-	A	L	A	A	A	A	A
18	-	-	-	-	-	-	-	L	A	A	043	044	A	A
19	-	-	-	-	-	-	-	S	S	A	A	A	043	043
20	-	-	-	-	-	-	-	L	L	042	A	A	A	A
21	-	-	-	-	-	-	-	-	-	A	A	044	A	043
22	-	-	-	-	-	-	-	A	L	L	B	046	A	A
23	-	-	-	-	-	-	-	-	-	043	-	-	-	044
24	-	-	-	-	-	-	-	A	L	L	045	043	045	A
25	-	-	-	-	-	-	L	L	L	A	A	A	A	045
26	-	-	-	-	-	-	-	-	-	L	042	044	B	B
27	-	-	-	-	-	-	-	B	L	L	B	A	A	A
28	-	-	-	-	-	-	-	A	A	A	A	A	045	043
29	-	-	-	-	-	-	-	L	L	A	A	A	044	S
30	-	-	-	-	-	-	-	L	L	040	043	045	044	045
31	-	-	-	-	-	-	-	A	L	041	042	043	043	043
Median Count	-	-	-	-	-	-	-	-	-	043 8	045 12	045 13	044 12	044 12
UQ	-	-	-	-	-	-	-	-	-	044	045	046	046	045
LQ	-	-	-	-	-	-	-	-	-	041	043	043	043	043
QR	-	-	-	-	-	-	-	-	-	3	2	3	3	2

*Tabulation of 043 = 4.3 Mc.

IONOSPHERIC DATA

Sweep: 1 Mc to 25 Mc in 0.5 minute

May 1964

08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
L	L	L	045	B	045	B	045	L	-	-	-	-	-	-	-
L	043*	043	045	A	A	042	043	L	L	-	-	-	-	-	-
-	-	-	A	A	A	041	A	A	-	-	-	-	-	-	-
L	A	045	A	0.5	B	043	B	-	-	-	-	-	-	-	-
U045S	044	S	C	C	B	U045C	B	C	C	-	-	-	-	-	-
A	A	46	A	U046S	U046C	044	A	L	L	-	-	-	-	-	-
L	L	044	U045S	045	046	043	041	L	L	-	-	-	-	-	-
C	045	045	046	044	045	045	044	L	L	-	-	-	-	-	-
-	-	-	-	-	-	-	042	L	L	-	-	-	-	-	-
-	-	-	-	044	-	-	-	L	L	-	-	-	-	-	-
A	L	B	A	C	A	043	L	C	C	-	-	-	-	-	-
046	A	046	U046S	B	B	C	C	L	L	-	-	-	-	-	-
L	A	A	S	A	A	046	045	L	L	-	-	-	-	-	-
L	043	045	046	046	043	A	A	I	I	-	-	-	-	-	-
A	L	A	A	A	A	C	045	A	A	-	-	-	-	-	-
L	A	A	A	A	A	A	A	A	A	-	-	-	-	-	-
A	A	043	044	A	A	043	043	A	A	-	-	-	-	-	-
S	A	A	A	043	A	A	A	C	L	-	-	-	-	-	-
L	042	A	A	A	A	A	A	A	L	-	-	-	-	-	-
-	A	A	C.4	A	043	043	043	A	L	-	-	-	-	-	-
L	L	B	046	A	A	043	045	A	L	-	-	-	-	-	-
-	043	-	-	-	044	041	041	B	B	-	-	-	-	-	-
L	L	045	043	045	A	A	A	C	L	-	-	-	-	-	-
L	A	A	A	A	045	043	043	L	L	-	-	-	-	-	-
-	L	042	044	B	B	A	A	A	A	-	-	-	-	-	-
L	L	B	A	A	A	A	A	A	A	-	-	-	-	-	-
A	A	A	A	045	043	A	A	A	A	-	-	-	-	-	-
L	A	A	A	044	S	A	B	A	B	-	-	-	-	-	-
L	040	043	045	044	045	A	A	L	L	-	-	-	-	-	-
L	041	042	043	043	043	043	041	L	L	-	-	-	-	-	-
-	043	045	045	044	044	043	043	-	-	-	-	-	-	-	-
-	8	12	13	12	12	15	7	-	-	-	-	-	-	-	-
-	044	045	046	046	045	045	045	-	-	-	-	-	-	-	-
-	041	043	043	043	043	043	041	-	-	-	-	-	-	-	-
-	3	2	3	3	2	2	4	-	-	-	-	-	-	-	-

Characteristic: M(3000)F₁

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5 minu

May 1964

Observed at:

Bangkok, Thailand

Lat. 13. 73°N, Long. 100.57°E

105°E Mean Time (GMT + 7 hours)

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13
1	-	-	-	-	-	-	-	L	L	L	L	-	B	360
2	-	-	-	-	-	-	-	-	L	350*	380	370	A	A
3	-	-	-	-	-	-	-	-	-	-	-	A	A	A
4	-	-	-	-	-	-	-	L	L	A	365	A	-	B
5	-	-	-	-	-	-	-	S	S	350	S	C	C	B
6	-	-	-	-	-	-	-	L	A	A	380	A	U400S	U420
7	-	-	-	-	-	-	-	-	L	L	410	U430S	380	410
8	-	-	-	-	-	-	C	C	C	400	395	420	415	410
9	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	L	-	-	-	-	400	A
11	-	-	-	-	-	-	-	-	-	L	B	A	C	C
12	-	-	-	-	-	-	-	A	A	L	B	B	B	B
13	-	-	-	-	-	-	-	L	380	A	410	S	A	A
14	-	-	-	-	-	-	-	L	L	A	A	S	S	S
15	-	-	-	-	-	-	-	A	L	-	410	420	420	405
16	-	-	-	-	-	-	-	L	A	L	A	A	A	A
17	-	-	-	-	-	-	-	A	L	A	A	A	A	A
18	-	-	-	-	-	-	-	L	A	A	400	420	A	A
19	-	-	-	-	-	-	-	S	S	A	A	A	420	420
20	-	-	-	-	-	-	-	L	L	400	A	A	A	A
21	-	-	-	-	-	-	-	-	-	A	A	425	A	-
22	-	-	-	-	-	-	-	A	L	L	B	390	A	A
23	-	-	-	-	-	-	-	-	-	400	-	-	-	400
24	-	-	-	-	-	-	-	A	L	L	-	-	-	A
25	-	-	-	-	-	-	L	L	L	A	A	A	A	-
26	-	-	-	-	-	-	-	-	-	L	-	400	B	B
27	-	-	-	-	-	-	-	B	L	L	B	A	A	A
28	-	-	-	-	-	-	-	A	A	A	A	A	415	410
29	-	-	-	-	-	-	-	L	L	A	A	A	-	S
30	-	-	-	-	-	-	-	L	L	400	380	-	415	-
31	-	-	-	-	-	-	-	A	L	-	410	430	430	430
Median	-	-	-	-	-	-	-	-	380	400	395	420	415	410
Count	-	-	-	-	-	-	-	-	J	6	9	9	9	9
UQ	-	-	-	-	-	-	-	-	-	-	400	430	420	420
LQ	-	-	-	-	-	-	-	-	-	-	380	390	400	402
QR	-	-	-	-	-	-	-	-	-	-	20	40	20	18

*Tabulation of 350 = factor of 3.5.

A

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5 minute

Sweep: 1 Mc to 25 Mc in 0.5 minute

May 1964

08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
L	L	L	-	B	360	B	325	L	-	-	-	-	-	-	-
L	350*	380	370	A	A	400	-	L	L	-	-	-	-	-	-
-	-	-	A	A	A	380	A	A	L	-	-	-	-	-	-
L	A	365	A	-	B	380	B	-	-	-	-	-	-	-	-
S	350	S	C	C	B	U365C	B	C	-	-	-	-	-	-	-
A	A	380	A	U400S	U420C	410	A	L	C	-	-	-	-	-	-
L	L	410	U430S	380	410	400	410	L	L	-	-	-	-	-	-
C	400	395	420	415	410	400	400	L	L	-	-	-	-	-	-
-	-	-	-	-	-	-	400	L	L	-	-	-	-	-	-
-	-	-	-	400	A	-	-	L	L	-	-	-	-	-	-
A	L	B	A	C	C	375	L	L	L	-	-	-	-	-	-
380	L	B	B	B	B	C	C	C	A	-	-	-	-	-	-
L	A	410	S	A	A	400	395	L	L	-	-	-	-	-	-
L	A	A	S	S	S	A	L	L	L	-	-	-	-	-	-
A	-	410	420	420	405	C	L	L	-	-	-	-	-	-	-
A	L	A	A	A	A	400	A	A	A	-	-	-	-	-	-
A	A	A	A	A	A	A	A	A	A	-	-	-	-	-	-
S	A	400	420	A	A	S	-	C	L	-	-	-	-	-	-
L	400	A	A	420	420	A	A	A	A	-	-	-	-	-	-
-	A	A	A	A	A	A	A	A	L	-	-	-	-	-	-
L	L	B	425	A	-	385	-	A	A	-	-	-	-	-	-
-	400	-	390	A	A	400	400	B	B	-	-	-	-	-	-
L	L	-	-	-	A	A	A	C	L	-	-	-	-	-	-
-	L	A	A	A	-	390	390	L	L	-	-	-	-	-	-
L	L	B	400	B	B	A	A	A	A	-	-	-	-	-	-
A	A	A	A	A	A	A	A	A	A	-	-	-	-	-	-
L	A	A	A	415	410	A	A	A	A	-	-	-	-	-	-
L	400	380	-	-	S	A	B	A	B	-	-	-	-	-	-
L	-	410	430	430	430	400	410	L	L	-	-	-	-	-	-
380	400	395	420	415	410	400	400	-	-	-	-	-	-	-	-
1	6	9	9	9	9	6	6	-	-	-	-	-	-	-	-
-	-	400	430	420	420	410	410	-	-	-	-	-	-	-	-
-	-	380	390	400	402	360	360	-	-	-	-	-	-	-	-
-	-	20	40	20	18	50	50	-	-	-	-	-	-	-	-

2

Characteristic: foE

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5 minute

May 1964

Observed at:

Bangkok, Thailand

Lat. 13. 73°N, Long. 100.57°E

105°E Mean Time (GMT + 7 hours)

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13
1	-	-	-	-	-	-	-	-	-	-	-	B	B	B
2	-	-	-	-	-	-	-	-	A	A	A	A	A	A
3	-	-	-	-	-	-	-	-	-	-	-	A	A	A
4	-	-	-	-	-	-	-	-	-	-	-	A	A	A
5	-	-	-	-	-	-	-	A	S	A	A	A	A	B
6	-	-	-	-	-	-	-	S	A	B	S	C	C	B
7	-	-	-	-	-	-	-	S	S	A	A	A	S	A
8	-	-	-	-	-	-	-	-	A	A	B	S	030F*	S
9	-	-	-	-	-	-	C	C	C	A	A	A	A	A
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	B	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	-	A	B	A	C	A
13	-	-	-	-	-	-	-	A	A	A	B	B	B	B
14	-	-	-	-	-	-	-	A	A	A	A	S	A	A
15	-	-	-	-	-	-	-	A	A	A	A	S	S	A
16	-	-	-	-	-	-	-	A	A	A	A	A	B	A
17	-	-	-	-	-	-	-	S	A	A	A	A	A	A
18	-	-	-	-	-	-	-	A	A	A	A	A	A	A
19	-	-	-	-	-	-	-	A	A	A	A	A	A	A
20	-	-	-	-	-	-	-	S	S	A	A	A	A	A
21	-	-	-	-	-	-	-	A	A	A	A	A	A	A
22	-	-	-	-	-	-	-	-	-	A	A	A	A	A
23	-	-	-	-	-	-	-	A	A	A	B	A	A	A
24	-	-	-	-	-	-	-	-	A	A	-	-	-	A
25	-	-	-	-	-	-	-	A	A	A	A	A	A	A
26	-	-	-	-	-	-	A	A	A	A	A	A	A	A
27	-	-	-	-	-	-	-	-	-	A	A	A	B	B
28	-	-	-	-	-	-	-	B	A	A	B	A	A	A
29	-	-	-	-	-	-	-	A	A	A	A	A	A	A
30	-	-	-	-	-	-	-	A	A	A	A	A	A	S
31	-	-	-	-	-	-	-	A	A	A	A	S	A	A
Median	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Count	-	-	-	-	-	-	-	-	-	-	-	-	-	-
UQ	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LQ	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QR	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Tabulation of 030 = 3.0 Mc.

A

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5 minute

Sweep: 1 Mc to 25 Mc in 0.5 minute

Sweep: 1 Mc to 25 Mc in 0.5 minute

A

Characteristic: h'E

IONOSPHERIC DATA

Sweep: 1 Mc to 25 Mc in 0.5 minute

May 1964

Observed at:

Bangkok, Thailand

Lat. 13. 73°N, Long. 100.57°E

105°E Mean Time (GMT + 7 hours)

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13
1	-	-	-	-	-	-	-	-	-	-	-	B	B	B
2	-	-	-	-	-	-	-	-	A	A	A	A	A	A
3	-	-	-	-	-	-	-	-	-	-	-	A	A	A
4	-	-	-	-	-	-	-	A	S	A	A	A	A	B
5	-	-	-	-	-	-	-	S	A	P	S	C	C	B
6	-	-	-	-	-	-	-	S	S	A	110*	A	S	100
7	-	-	-	-	-	-	-	-	A	110	B	S	120B	S
8	-	-	-	-	-	-	C	C	C	A	A	A	A	A
9	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	B	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	A	B	A	C	A
12	-	-	-	-	-	-	-	-	-	A	B	B	B	C
13	-	-	-	-	-	-	-	A	A	A	A	A	A	B
14	-	-	-	-	-	-	-	A	A	A	A	A	A	A
15	-	-	-	-	-	-	-	110	110	A	A	S	S	S
16	-	-	-	-	-	-	-	A	A	A	A	A	B	A
17	-	-	-	-	-	-	-	S	A	A	A	A	A	A
18	-	-	-	-	-	-	-	A	A	A	A	A	A	A
19	-	-	-	-	-	-	-	A	A	A	A	A	A	A
20	-	-	-	-	-	-	-	S	S	A	A	A	A	A
21	-	-	-	-	-	-	-	A	A	A	A	A	A	A
22	-	-	-	-	-	-	-	-	-	A	A	A	A	A
23	-	-	-	-	-	-	-	A	A	A	B	A	A	A
24	-	-	-	-	-	-	-	-	-	A	-	-	-	A
25	-	-	-	-	-	-	-	A	A	A	115	A	A	A
26	-	-	-	-	-	-	-	A	A	A	A	A	A	A
27	-	-	-	-	-	-	-	-	-	A	A	A	B	B
28	-	-	-	-	-	-	-	B	A	A	B	A	A	A
29	-	-	-	-	-	-	-	A	A	A	A	A	A	A
30	-	-	-	-	-	-	-	A	A	A	A	A	A	S
31	-	-	-	-	-	-	-	A	A	A	A	S	A	A
Median Count	-	-	-	-	-	-	-	110	110	110	112	-	120	100
UQ	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LQ	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QR	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Tabulation of 110 = 110km.

A

Sweep: 1 Mc to 25 Mc in 0.5 minute

A

[illegible]

Characteristic: fbEs

IONOSPHERIC DATA

Sweep: 1 Mc to 25 Mc in 0.5 minute

May 1964

Observed at:

Bangkok, Thailand

Lat. 13. 73°N, Long. 100.57°E

105°E Mean Time (GMT + 7 hours)

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13
1	B	B	B	B	B	B	027M*	B	030	B	B	B	B	B
2	-	-	B	B	B	B	028	032	032	040	039	041	046	042
3	B	B	C	C	C	C	C	C	C	C	C	050M	M	M
4	-	032	B	B	B	B	021	030	032	060	035	050	045	B
5	C	-	-	B	B	B	S	S	U040S	B	S	C	C	B
6	020M	B	015M	014M	020M	M	-	U042S	U056S	055M	038M	-	036	C
7	B	B	B	-	B	-	023	-	035M	034	B	040	B	037
8	C	C	C	C	C	C	C	C	C	035	035	038	035	040
9	018	M	-	-	-	-	-	-	-	035	033	028	-	-
10	030	033	-	C	B	B	U037C	B	-	-	-	-	040	040
11	B	030M	027M	B	B	C	C	C	C	033	B	-	C	C
12	-	B	-	-	C	-	026	041	B	045	B	B	B	B
13	B	022	016	019	023	-	-	031	033	045M	040	S	-	060
14	B	-	-	B	-	-	026	031	037	044	045M	S	S	S
15	B	-	S	-	M	-	S	031M	033M	043	043M	036M	B	032
16	B	S	S	S	M	M	023	M	058M	034	057M	053M	053M	055M
17	-	B	B	B	-	-	-	034M	037M	045	054	-	-	-
18	S	B	B	B	B	-	030	030	043M	050M	035	041M	048M	048M
19	S	S	S	-	-	S	S	S	S	052M	053M	048M	040M	040M
20	S	S	B	017	-	-	029M	028	033	036	044M	050M	061M	046
21	030M	M	-	-	-	026	C	C	C	038	047	040	050M	037
22	B	M	022	025M	M	-	-	-	-	031	035	B	040	050
23	-	-	-	-	-	-	-	-	-	043	-	-	-	039
24	B	B	B	-	-	-	-	M	036	041	045	043	045	046
25	B	-	018	017	-	B	030	037	040	043	045	052	050	039
26	B	B	B	-	-	-	-	-	-	035	038	036	B	B
27	B	B	-	-	-	-	B	B	024	031	B	-	-	-
28	B	B	B	B	-	-	-	036	050	048	-	050	041	038
29	S	-	B	B	B	S	025	030	040	050	051	048	040	S
30	S	-	-	-	-	-	028	030	033	033	040	S	041	045
31	020	021	B	-	-	-	027	028	032	040	036	035	036	035
Median	020	030	018	017	-	-	027	031	036	041	042	041	045	040
Count	5	5	5	5	-	-	14	15	21	27	20	19	17	18
UQ	030	032	022	019	-	-	029	036	040	045	048	050	050	046
LQ	019	022	016	017	-	-	025	030	032	035	037	038	040	038
QR	11	10	6	2	-	-	4	6	8	10	11	12	10	8

*Tabulation of 027 = 2.7 Mc

IONOSPHERIC DATA

Sweep: 1 Mc to 25 Mc in 0.5 minute

May 1964

08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
030	B	B	B	B	B	B	B	B	B	B	029	026	B	029M	025M
032	040	039	041	046	042	039	035	031	-	030	B	019	023	029	018
C	C	C	050M	M	M	035	045	041	029	030M	019	B	B	B	045
032	060	035	050	045	B	040	B	C	C	C	C	C	C	C	C
0408	B	S	C	C	B	B	B	C	C	C	U0238	S	S	-	-
0568	055M	038M	-	036	C	034	050	040	035	035	U0228	020	S	S	S
035M	034	B	040	B	037	B	B	B	B	027	025	021	B	B	B
C	035	035	038	035	040	038	036	033	030	B	B	B	029	029	027
-	035	033	028	-	-	-	035	033	028	023M	023M	022M	011M	-	029
-	-	-	-	040	040	-	-	033	-	B	-	-	-	B	034M
C	033	B	-	C	C	B	033	036	030	028	026	033	028	-	B
B	045	B	B	B	B	C	C	C	050	034	033	B	-	-	B
033	040M	040	S	-	060	041	B	035	034	052	050M	026	028	B	B
037	044	045M	S	S	S	054M	B	B	031	S	S	S	S	S	S
033M	043	043M	036M	B	032	C	035	036	028	-	B	B	030	S	S
058M	034	057M	053M	053M	055M	041	059	064	034	050M	045M	032	040	S	026
037M	045	054	-	-	-	061	050M	060M	U0505	U0508	U0408	S	S	S	S
043M	050M	035	041M	048M	048M	S	C	S	S	S	C	S	S	S	S
S	052M	053M	048M	040M	040M	042M	052M	U0458	U0345	027	035	S	S	S	S
033	036	044M	050M	061M	046	053M	033M	031	U0345	029	B	S	S	B	B
C	038	047	040	050M	037	039	042M	U0388	036	B	B	B	B	039	035M
031	035	B	040	049	050	045M	041	036	B	S	026	B	B	B	B
-	043	-	-	-	039	037	B	B	034	038	030	-	B	B	B
036	041	045	043	045	046	050	C	032	030	023	B	B	B	B	B
040	043	045	052	050	039	032	034	030	028	032	B	B	B	B	B
-	035	038	036	B	B	058	050	036	-	-	U0325	027	027	B	B
024	031	B	-	-	-	-	065	052	U0505	060	055	028	028	-	-
050	048	-	050	041	038	040	062	058	043	050	S	S	S	030	S
040	050	051	048	040	S	051	B	036	B	037	036	S	S	B	B
033	033	040	S	041	045	048	050	033	S	S	S	S	B	S	-
032	040	036	035	036	035	038	B	053	035	029	S	S	S	026	S
036	041	042	041	045	040	041	048	036	034	031	030	026	028	029	027
21	27	20	19	17	18	21	18	23	20	20	17	10	8	7	8
040	045	048	050	050	046	051	052	045	036	038	038	028	030	030	032
032	035	037	038	040	038	039	035	033	030	028	025	022	028	029	025
8	10	11	12	10	8	12	17	12	6	10	13	6	2	1	7

Characteristic: f_oE_s

IONOSPHERIC DATA

Sweep: 1 Mc to 25 Mc in 0.5 minute

Observed at:

May 1964

Bangkok, Thailand

Lat. 13.73°N , Long. 100.57°E

105°E Mean Time (GMT + 7 hours)

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14
1	B	B	B	B	B	B	029M*	B	030	B	B	B	B	B	B
2	040	042	B	B	B	B	057	045	037M	041M	045	041	046	042	05
3	B	B	C	C	C	C	C	C	C	C	C	087M	105M	101M	07
4	052	067	B	B	B	B	027	035	032	085	037	072	076	B	04
5	C	035	030	B	B	B	S	S	U057S	B	S	C	C	B	04
6	035M	B	029M	034M	035M	045M	050	U055S	U093S	100M	071M	090	036	U060C	05
7	B	B	B	019	B	032	026	036	043M	036	B	040	B	039	05
8	C	C	C	C	C	C	C	C	C	042	035	039	037	040	03
9	029	036M	021	-	-	-	-	-	-	-	-	-	-	-	03
10	045	060	040	U040C	B	B	U037C	B	-	-	-	-	-	-	-
11	B	042M	054M	B	B	C	C	C	C	033	B	037	C	C	-
12	044	B	050	062	C	033	035	041	B	054	B	B	B	B	-
13	B	032	026	031	030	039	033	039	033	062M	040	D075S	095	086	07
14	B	050	039	B	040	040	034	034	041	044	049M	S	S	S	09
15	B	020	S	026	033M	035	S	090M	054M	043	046M	075M	B	032	07
16	B	S	S	S	055M	041M	031	040M	120M	080	075M	103M	100M	100M	08
17	035	B	B	B	028	030	045	075M	054M	052	080	100	096	095	10
18	S	B	B	B	B	027	036	037	077M	080M	049	070M	090M	090M	10
19	S	S	S	033	023	S	S	S	U040S	077M	093M	066M	067M	049M	07
20	S	S	B	017	050	045	065M	042	055	045	065M	070M	081M	052	08
21	055M	078M	047	049	034	031	C	C	C	038	040	042	060M	037	03
22	B	045M	026	047M	045M	060	050	041	031	035	B	040	090	080	07
23	-	-	-	-	-	-	-	-	-	046	-	-	-	055	04
24	B	B	B	055	040	040	047	105M	037	041	045	062	069	052	08
25	B	018	019	026	037	B	041	090	032	046	073	057	068	050	05
26	B	B	B	-	-	-	-	-	-	044	053	047	B	B	07
27	B	B	023	027	021	023	B	B	034	034	B	079	090	175	12
28	B	B	B	B	023	040	070	075	093	090	091	100	092	041	09
29	S	033	B	B	B	S	036	045	055	080	080	075	055	S	05
30	S	029	041	048	039	031	041	040	055	043	046	S	046	045	08
31	043	048	B	070	055	057	078	058	050	080	058	040	040	038	06
Median	042	042	030	034	036	039	039	042	047	046	051	070	069	051	07
Count	9	15	13	15	16	17	20	19	22	26	20	23	21	22	2
UQ	050	055	041	049	042	041	050	061	055	080	074	077	091	086	08
LQ	032	033	026	027	029	031	033	040	034	041	045	042	046	040	08
QR	18	22	15	22	13	10	17	21	21	39	29	35	45	46	3

*Tabulation of 029 = 2.9 Mc.

A

IONOSPHERIC DATA

Sweep: 1 Mc to 25 Mc in 0.5 minute

May 1964

08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
30	B	B	B	B	B	B	B	B	B	B	036	026	B	040M	036M
37M	041M	045	041	046	042	053	036	035	033	035	B	019	023	031	018
C	C	C	087M	105M	101M	070	053	041	040	040M	019	B	B	B	070
32	085	037	072	076	B	045	B	C	C	C	C	C	C	C	C
57S	B	S	C	C	B	B	B	C	C	C	U030S	S	S	024	018
93S	100M	071M	090	036	U060C	050	066	076	050	046	043	023	S	S	S
43M	036	B	040	B	039	B	B	B	B	037	028	022	B	B	B
C	042	035	039	037	040	038	036	033	032	B	B	B	039	034	031
-	-	-	-	-	-	-	035	033	031	030M	034M	056M	085M	080	045
-	-	-	-	045	040	-	-	033	033	B	-	-	-	B	065M
C	033	B	037	C	C	B	038	038	038	031	030	065	057	042	B
3	054	B	B	B	B	C	C	C	068	044	040	B	030	029	E
33	062M	040	D075S	095	086	074	B	035	048	066	090M	034	034	B	B
41	044	049M	S	S	S	099M	B	B	041	S	S	S	S	S	S
54M	043	046M	075M	B	032	C	039	045M	040	045	030	B	B	032	B
20M	080	075M	103M	100M	100M	086	093	096	085	070M	050M	065	040	S	026
54M	052	080	100	096	095	102	090M	100M	U070S	U070S	U070S	S	S	S	S
77M	080M	049	070M	090M	090M	S	C	S	S	S	S	S	S	S	S
40S	077M	093M	066M	067M	049M	072M	080M	U070S	U055S	045	046	S	S	S	B
55	045	065M	070M	081M	052	080M	090M	052	U040S	035	B	S	S	029	036M
C	038	040	042	060M	037	039	085M	U055S	038	B	B	B	B	B	B
31	035	B	040	090	080	070M	041	036	B	S	040	B	B	B	B
-	046	-	-	-	055	047	B	B	040	055	041	029	B	B	B
37	041	045	062	069	052	080	C	078	075	041	B	B	B	B	B
32	046	073	057	068	050	050	045	041	035	033	B	B	B	B	B
-	044	053	047	B	B	070	057	046	-	-	U040S	033	028	B	B
34	034	B	079	090	175	124	112	100	U090S	085	055	032	030	045	023
93	090	091	100	092	041	090	100	100	080	065	S	S	S	030	S
55	080	080	075	055	S	051	B	036	B	040	036	S	S	B	B
55	043	046	S	046	045	080	075	038	S	S	S	S	B	S	021
50	080	058	040	040	038	061	B	066	041	029	S	S	S	040	S
47	046	051	070	069	051	070	062	045	041	043	040	032	034	033	031
22	26	20	23	21	22	22	18	23	22	20	18	11	9	12	11
55	080	074	077	091	086	080	090	073	068	055	046	045	040	041	040
34	041	045	042	046	040	050	039	036	038	035	030	024	030	029	022
21	39	29	35	45	46	30	51	37	30	20	16	21	10	12	18

Characteristic: h'E_s

IONOSPHERIC DATA

Sweep: 1 Mc to 25 Mc in 0.5 minute

May 1964

Observed at:

Bangkok, Thailand

Lat. 13. 73°N, Long. 100.75°E

105°E Mean Time (GMT + 7 hours)

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13	
1	B	B	B	B	B	B	130*	B	140	B	B	B	B	B	
2	160	135	B	B	B	B	140	130	140	140	135	140	130	130	
3	B	B	C	C	C	C	C	C	C	C	C	-	-	-	
4	140	130	B	B	B	B	150	160	150	130	140	130	130	B	
5	C	140	150	B	B	B	S	S	150	B	S	C	C	B	
6	110	B	110	110	100	-	100	80	110	100	100	100	110	112	
7	B	B	B	110	B	100	110	110	110	110	B	110	B	110	
8	C	C	C	C	C	C	C	C	C	100	100	100	100	100	
9	90	112	120	-	-	-	-	-	-	-	-	-	-	-	
10	100	100	100	U110C	B	B	U110C	B	-	-	-	-	-	-	
11	B	130	120	B	B	C	C	C	-	-	-	-	120	110	
12	120	B	110	110	C	110	110	100	B	110	B	90	C	C	
13	B	110	110	100	100	100	130	110	110	100	100	B	B	B	
14	B	110	100	B	100	100	100	130	120	120	130	100	95	95	
15	B	90	S	120	110	105	S	110	110	100	110	100	S	S	
16	B	S	S	S	105	100	105	105	100	100	100	100	B	120	
17	90	B	B	B	110	105	105	105	105	100	100	100	90	90	
18	S	B	B	B	B	110	110	110	100	100	100	100	100	100	
19	S	S	S	110	110	S	S	S	U100S	100	100	100	100	100	
20	S	S	B	110	110	110	110	110	110	105	100	100	100	100	
21	100	100	105	100	105	105	C	C	C	118	105	100	100	100	
22	B	103	120	110	110	100	100	120	115	110	B	100	100	100	
23	-	-	-	-	-	-	-	-	-	100	-	-	-	100	
24	B	B	B	105	100	100	100	105	110	110	130	110	110	110	
25	B	120	120	102	100	B	110	100	100	110	108	102	100	105	
26	B	B	B	-	-	-	-	-	-	110	100	100	B	B	
27	B	B	090	090	090	090	B	B	110	110	B	100	100	100	
28	B	B	B	B	120	100	100	096	100	110	110	110	110	100	
29	S	118	B	B	B	S	100	100	100	100	100	098	092	S	
30	S	108	120	110	100	100	100	100	100	100	100	S	090	092	
31	100	110	B	110	110	100	100	100	102	100	100	100	100	100	
Median	100	110	110	110	105	100	107	105	110	102	100	100	100	100	
Count	9	15	13	15	16	16	20	19	22	26	20	22	20	21	
UQ	120	125	120	110	110	105	110	110	115	110	140	102	110	110	
LQ	100	105	100	103	100	100	100	100	100	100	100	100	100	100	
QR	20	20	20	7	10	5	10	10	15	10	10	2	10	10	

*Tabulation of 130 = 130 km.

IONOSPHERIC DATA

Sweep: 1 Mc to 25 Mc in 0.5 minute

May 1964

08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
140	B	B	B	B	B	B	B	B	B	B	120	135	B	160	160
140	140	135	140	130	130	130	120	130	150	130	B	130	130	150	150
C	C	C	-	-	-	125	120	120	120	120	120	B	B	B	130
150	130	140	130	130	B	130	B	C	C	C	C	C	C	C	C
150	B	S	C	C	B	B	B	C	C	C	100	S	S	130	130
110	100	100	100	110	112	100	100	100	100	095	090	090	S	S	S
110	110	B	110	B	110	B	B	B	B	100	090	090	B	B	B
C	100	100	100	100	100	100	95	110	110	B	B	B	090	090	090
-	-	-	-	-	-	-	125	110	110	100	100	100	100	100	100
-	-	-	-	130	110	-	-	110	118	B	-	-	-	B	140
C	110	B	90	C	C	B	90	95	090	90	090	100	-	100	B
B	100	B	B	B	B	C	C	C	090	90	090	B	120	120	B
110	100	100	100	95	95	100	B	120	110	100	100	100	110	B	B
120	120	130	S	S	S	100	B	B	110	S	S	S	S	S	S
110	100	110	100	B	120	C	110	100	100	100	100	B	B	090	B
100	100	100	100	90	90	90	90	90	90	90	090	090	090	S	090
105	100	100	100	100	100	100	95	100	100	90	090	S	S	S	S
100	100	100	100	100	100	S	C	S	S	S	S	S	S	S	S
U1005	100	100	100	100	100	100	100	100	100	100	090	S	S	S	B
110	105	100	100	100	100	95	95	97	100	90	B	S	S	108	108
C	118	105	100	100	100	095	100	100	097	B	B	B	B	B	B
115	110	B	100	100	100	100	100	100	B	S	095	B	B	B	B
-	100	-	-	-	100	100	100	B	107	110	110	115	B	B	B
110	110	130	110	110	110	105	C	105	100	100	B	B	B	B	B
100	110	108	102	100	105	102	100	100	100	100	B	B	B	B	B
-	110	100	100	B	B	110	105	105	-	-	090	090	098	B	B
110	110	B	100	100	100	100	100	100	100	100	095	090	090	090	090
100	110	110	110	110	100	100	100	100	100	093	S	S	S	098	S
100	100	100	098	092	S	094	B	090	B	090	090	S	S	B	B
100	100	100	S	090	092	098	090	087	S	S	S	S	B	S	088
102	100	100	100	100	100	094	B	116	110	105	S	S	B	100	S
110	102	100	100	100	100	100	100	100	100	100	092	100	099	100	108
22	26	20	23	20	21	22	18	23	22	31	18	11	8	12	11
115	110	110	102	110	110	102	105	110	110	100	100	107	115	125	135
100	100	100	100	100	100	098	095	100	100	090	090	090	090	094	090
15	10	10	2	10	10	4	10	10	10	10	10	17	25	31	45

Characteristic: Type of Es

IONOSPHERIC DATA

Sweep: 1 Mc to 25 Mc in 0.5 minute

May 1964

Observed at:

Bangkok, Thailand

Lat. 13. 73°N, Long. 100.57°E

105°E Mean Time (GMT + 7 hours)

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13
1	-	-	-	-	-	-	f2	-	l	-	-	-	-	-
2	f	f2	-	-	-	-	f2	-	l	-	-	-	-	-
3	-	-	-	-	-	-	f2	f	l	c	l	c	l	l
4	f	f2	-	-	-	-	-	-	-	-	-	l2	l3	l3
5	-	f	f	-	-	-	f	h	h	l3	l	l2	l2	-
6	f	-	f	f	f	f3	f2	-	l	-	-	-	-	-
7	-	-	-	f	-	f3	f	l2	l2	l2	l	l3	l	l
8	-	-	-	-	-	-	-	f	c	c	-	c	-	-
9	f	f	f	-	-	-	-	-	-	l	l	l	l	l
10	f	f	f	f	-	-	-	-	-	-	-	-	-	-
11	-	f	f	-	-	-	f	-	-	-	-	-	c	c
12	f	-	f	f	-	-	-	-	-	c	-	l	-	-
13	-	f2	f2	f2	-	f	f	l	-	l	-	-	-	-
14	-	f2	f2	-	f2	f2	f	l	c	l	l	l	l3	l2
15	-	f	-	f	f4	f4	f	h	h	h	h	-	-	-
16	-	-	-	-	f	f	l2	l	l	l	l	l	-	h
17	f	-	-	-	f3	f2	-	l	l4	l	l	l3	l3	l3
18	-	-	-	-	f	f	l	l	l	l	l	l4	l4	l3
19	-	-	-	f	f	f	f	l	l2	l2	l	l	l2	l2
20	-	-	-	-	-	-	-	-	l	l3	l3	l2	l	l
21	f	f4	f4	f5	f2	f	f4	l2	l	l	l	l2	l2	l
22	-	f2	f	f2	f2	f5	f3	-	-	l	l	l	l	l
23	-	-	-	-	-	-	-	l	c	-	-	l	l2	l
24	-	-	-	f	f3	f2	f2	-	-	l	-	-	-	l
25	-	f	f	f	f	-	l	l3	l	l	h	l	l	l
26	-	-	-	-	-	-	-	l2	c	l	l	l2	l2	l
27	-	-	f	f	f	f	-	-	-	l	l	l	-	-
28	-	-	-	-	f	f3	f4	l4	l2	l2	l3	l2	l	l3
29	-	f	-	-	-	-	f2	l2	l2	l3	l2	l2	l	l
30	-	f3	f	f	f2	f2	f	l2	l2	l	l	-	l	-
31	f3	f3	-	f4	f2	f6	f5	l3	l	l2	l	l	l	l

IONOSPHERIC DATA

weep: 1 Mc to 25 Mc in 0.5 minute

May 1964

09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
-	-	-	-	-	-	-	-	-	-	f	f	-	f	f
c	f	c	f	f	f	f	c	c	f	f	f	f	f	f
f3	f	f2	f3	f3	f	f	f3	f	f	f	f	f	f	f4
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
f3	f	f3	f	f	f	f2	f2	f2	f2	f	f	-	-	-
c	-	c	-	-	-	-	-	-	-	-	-	-	-	-
f	f	f	f	f	f	f	c	c	f	f	f	f2	f	-
-	-	-	-	-	-	-	c	c	-	-	-	-	-	-
c	-	-	c	c	-	-	c	c	f	f	f4	f4	f5	f
f	-	-	-	-	-	-	f	-	-	-	-	-	-	-
f	f	f	f3	f2	-	-	-	f2	f	f	f	f	f2	f
f	f	-	-	f	f2	-	c	-	f2	f3	f	f	-	-
f	f	f	-	f	-	c	f	f2	f	f	f	-	-	-
f2	f	f3	f3	f3	f2	f2	f4	f3	f3	f4	f5	f3	-	f
f3	f3	f2	f2	f2	-	-	-	f4	f3	f2	-	-	-	-
f	f	f2	f	f	f	f3	f	f3	f	f	-	-	-	-
-	-	f	f2	f	f2	f3	f2	f2	-	-	-	-	f2	f
f	-	-	-	f	f	f	-	-	-	-	-	-	-	-
f	f	f	f	f	f	-	-	f	f	f	f	-	-	-
f	f	f3	f2	f	f	f3	f3	f3	f	-	-	-	-	-
2	f3	f2	f	f3	f3	f4	f4	f4	f7	f4	f	f	f	-
f3	f2	f2	f	f	f3	f3	f3	f3	f3	-	f3	f2	f2	f2
f	f	-	f	f	f	-	f	-	f	f	-	-	-	-
2	f	f	f	f	f	f3	f2	-	f	f	f	-	-	f

MEDIAN VALUES MAY 1964

Hour Local	fmin (Mc)	fo F2 (Mc)	M(3000)F2	h'F2 (km)	h'F (km)	fo F1 (Mc)	M(3000)F1	fo E (Mc)	h'E (km)	fbEs (Mc)	fo Es (Mc)	h'Es (km)
00	2.1	3.4	3.05	-	330	-	-	-	-	2.0	4.2	100
01	1.7	3.4	3.10	-	280	-	-	-	-	3.0	4.2	110
02	1.7	3.1	3.40	-	255	-	-	-	-	1.8	3.0	110
03	1.6	2.8	3.50	-	260	-	-	-	-	1.7	3.4	110
04	1.5	2.7	3.55	-	250	-	-	-	-	-	3.6	105
05	1.6	2.8	3.30	-	250	-	-	-	-	-	3.9	103
06	2.0	4.4	3.35	-	250	-	-	-	-	2.7	3.9	107
07	2.5	6.2	3.20	-	240	-	-	-	110	3.1	4.2	105
08	2.8	6.6	2.85	320	230	-	3.80	-	110	3.6	4.7	110
09	3.0	6.8	2.70	350	210	-	4.00	-	110	4.1	4.6	102
10	3.3	6.7	2.50	385	215	4.3	3.95	-	112	4.2	5.1	100
11	3.1	6.3	2.60	400	200	4.5	4.20	-	-	4.1	7.0	100
12	3.0	6.6	2.55	400	200	4.4	4.15	-	120	4.5	6.9	100
13	3.1	7.2	2.60	370	200	4.4	4.10	-	100	4.0	5.1	100
14	3.0	7.4	2.70	360	210	4.3	4.00	-	-	4.1	7.0	100
15	2.9	7.9	2.85	340	200	4.3	4.00	-	110	4.8	6.2	100
16	2.9	8.7	2.95	320	220	-	-	-	-	3.6	4.5	100
17	2.6	9.0	3.00	300	240	-	-	-	-	3.4	4.1	100
18	2.4	9.5	3.20	-	240	-	-	-	-	3.1	4.3	100
19	2.0	9.0	3.40	-	230	-	-	-	-	3.0	4.0	92
20	2.0	7.5	3.50	-	220	-	-	-	-	2.6	3.2	100
21	2.3	5.7	3.30	-	240	-	-	-	-	2.8	3.4	99
22	2.0	4.4	3.30	-	260	-	-	-	-	2.9	3.3	100
23	2.0	3.6	3.05	-	315	-	-	-	-	2.7	3.1	108

per Enata Sheet 31 Dec 66

IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS
BANGKOK, THAILAND
MAY 1964

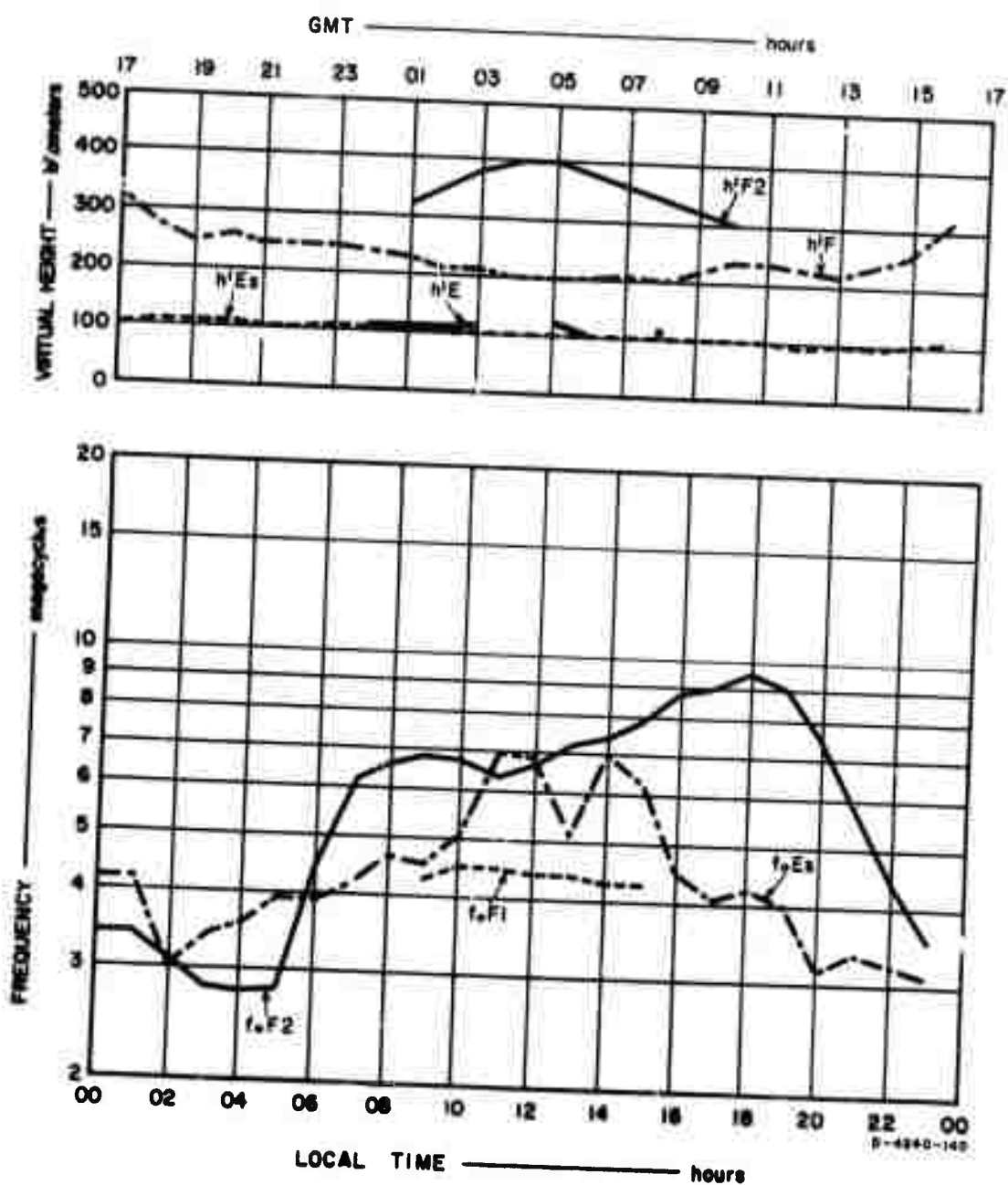


FIG. 1 SUMMARY GRAPHS

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